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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,902	09/12/2003	Magnus Nilsson	P16936-US4	8518

27045 7590 12/14/2005

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EXAMINER	
SHINGLETON, MICHAEL B	
ART UNIT	**PAPER NUMBER**
2817	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/661,902	NILSSON, MAGNUS
	Examiner	Art Unit
	Michael B. Shingleton	2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09-28-2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *3,5,8,19,20 and 22* is/are withdrawn from consideration.

5)☒ Claim(s) *4, 6, 7,10-12* is/are allowed.

6)☒ Claim(s) *1,2,9,13-18,21,23 and 27-29* is/are rejected.

7)☒ Claim(s) *24-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 9, 15-18, 21, 23 and 29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Smith 4,743,867 (Smith) as evidenced by Jopson 5,386,314 and Fredriksson 6,366,146.

Figure 3 and the relevant text of Smith disclose a phase modulator and method for controlling a gain of a voltage-controlled oscillator (VCO). It is noted that Smith shows "FM" for the high-pass modulation input signal, however, as evidenced by Jopson 5,386,314 a frequency modulation function is also a phase modulation function "Any frequency modulation function can be expressed as an equivalent phase modulation function." Thus the FM function of Smith is also a phase modulation function as evidenced by Jopson. The phase locked loop arrangement of Smith includes a typical phase detector 18. As is also conventionally known in the art the term phase detector is synonymous with phase frequency detector. This is evidenced by Fredriksson 6,366,146 that shows a typical phase detector (Note the black box labeled 11.) and clearly points out that a typical phase detector is "also referred to as a phase frequency detector". The frequency data signal of Smith forms a "low-pass modulation input". This signal does modulate, i.e. change the frequency of the phase locked loop. Applicant should also note that this terminal is fully capable of modulating the frequency on a cycle by cycle basis as well. Smith clearly shows the low-pass modulation input signal as being coupled to the phase frequency detector 18 in an indirect manner just like that of Figure 8 if the instant application (See Figure 3 of Smith). Element 40 of Smith is clearly described as a voltage-controlled oscillator and the signal on terminal 58 clearly forms a high-pass modulation input signal or "input". Note that the high-pass modulation input and the low-pass modulation input must refer to signals because it would not make sense to have an adder for combining two input terminals (See claim 9 of the instant application.). Figure 3 of Smith clearly shows this high pass modulation input as coupled to the VCO. Applicant should also note that the term "coupled" is a broad term in that intervening elements can be between two items that are "coupled". For example an electrical generator is coupled to a load even though there is a fuse element in-between. Element 94 of Smith forms a trimming circuit and is clearly shown in Figure 3 of Smith as being

connected between the phase frequency detector 18 and the VCO. The error signal 20 of Smith is received by the trimming circuit in an indirect manner as is clearly illustrated by Figure 3 of Smith. Note that the error signal 20 passes through elements like 92, 24, 28 and 42 before it is received by the trimming circuit 94. Filter 28 filters the error signal and thus a dynamic behavior of the trimming circuit is controlled. This error signal also has a gain component i.e. a magnitude and a feedback component due to the inherent feedback in a phase locked loop circuit. The trimming circuit 94 of Smith is in its basic forms an attenuator and this clearly controls the gain of the VCO in a conventional manner. Also since the high-pass modulation signal is applied to the input of this trimming circuit, this trimming circuit also controls the gain of the high-pass modulation input signal and the error signal. The adder or summer 36 adds the path that contains the low-pass modulation (part of the error signal) to the high pass modulation and thus adds "the low-pass modulation input and the high-pass modulation input" to form an all pass modulation input signal to the VCO in Smith. Note that since Applicant has not specifically defined "all-pass modulation" and both the low-pass and the high-pass modulation inputs are added and all are passed on to the VCO in Smith, Smith meets this limitation. As noted above the method disclosed by Smith includes a phase frequency detector 18, a low-pass modulation input signal "Frequency data", a voltage controlled oscillator 40, and the high-pass modulation input signal on terminal 58. This high-pass modulation input signal is clearly coupled to the voltage-controlled oscillator 40 as is clearly illustrated in Figure 3 of Smith. Also as recognized above the gain of the VCO is controlled by the trimming circuit 94 of Smith. Also as clearly recognized above the trimming circuit of Smith clearly *receives* the error signal of the phase detector but in an indirect manner. Also as indicted above the gain of the high-pass modulation input signal is *controlled* using the trimming circuit and the error signal such that the high-pass modulation input signal and the low-pass modulation input signal together form an all-pass modulation input to the voltage controlled oscillator. Note that summer 36 adds the error signal and the high-pass modulation signal such that the gain of the high-pass modulation signal is modified, i.e. the error signal is used in part to control the gain of the high-pass modulation signal, and then this new high-pass modulation signal is varied in gain by the trimming circuit. Also note that low-pass modulation signal in Applicant's disclosed invention at terminal 10 in Figure 8 is not directly added to the high-pass modulation signal. This low pass modulation signal too is converted to an error signal by the phase detector just like in Smith. Since Smith has the same structure as Applicant's disclosed and claimed invention, the adding or "combining" of the low-pass modulation input signal and the high-pass modulation input signal is added or combined in the same manner as applicant. The trimming circuit of Smith also called a "compensator circuit" takes the average VCO gain over the Jth interval and the

average gain of the VCO over the first interval to thereby forming a VCO estimate (See column 6 around line 43). Because for each frequency range or interval where the average VCO gain is obtained this is an estimation of the gain of the VCO based upon the center frequency of the desired output signal of the VCO which gets introduced to the VCO via an inverse relationship. This inverse of the VCO estimate is then applied to the VCO through the compensating circuit 94 so as to change the error signal voltage applied to the VCO to compensate for the VCO gain. Note that Applicant also recites in the instant application that an estimate of the gain of the voltage-controlled oscillator is for a compensation of the VCO gain. Thus since both Smith and Applicant's disclosed and claimed invention compensates for the gain of the VCO in the same manner by changing the error signal applied to the VCO, Smith is seen as meeting these claim limitations to VCO gain compensation, i.e. "to apply an estimate of the gain of the voltage controlled oscillator to the voltage control oscillator". Note that Smith does not continually measure the actual gain of the VCO and apply so sort of feedback loop to compensate for the gain at every instant in time.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 14, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over 4,743,867 (Smith) as evidenced by Jopson 5,386,314 and Fredriksson 6,366,146.

The reasoning of Smith as evidenced by Jopson and Fredriksson as applied in the above 35 USC 102 rejection and the following: Smith is silent on the use of "Enhanced Data GSM Environment communications system techniques and Wideband Code Division Multiple Access communication system techniques. Smith clearly recognizes that the system of Smith is for receiver applications and the like (See column 1, around line 5), but is silent on the exact type of phase/frequency modulation system the device of Smith is employed in. Both Enhanced Data GSM Environment and Wideband Code Division Multiple Access are art recognized equivalent phase/frequency modulation techniques used to

form a communication system. These are conventional phase/frequency modulation techniques used to form a conventional communication system.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed either Enhanced Data GSM Environment or an Wideband Code Division Multiple Access modulation technique/signal to the phase modulator of Smith for as the Smith reference is silent on the exact type of communication systems Smith that is to be employed, i.e. a Enhanced Data GSM Environment system or a Wideband Code Division Multiple Access system or a CDMA etc., one of ordinary skill in the art would have been motivated to use any art recognized equivalent phase modulation technique/signal as the input or modulating signal therefore such as either the conventional Enhanced Data GSM Environment or the conventional Wideband Code Division Multiple Access. To repeat one of ordinary skill would have been motivated to make the combination for the modulation schemes (Enhanced Data GSM Environment and Wideband Code Division Multiple Access) are conventional phase/frequency modulation schemes conventionally known to be used with conventional phase/frequency modulation arrangements such as Smith.

Applicant's arguments filed 9-28-2005 have been fully considered but they are not persuasive. Applicant argues that the Smith has a low-pass modulation input to the integrator (62). However, this was not was identified as the low-pass modulation input in the rejection. The low-pass modulation input is the Frequency data input which is like that of "10" of applicant. However, even given applicant's interpretation the term in the claim is "coupled" does not mean a direct connection and accordingly even the low-pass modulation input identified by applicant of Smith would be coupled to eh phase frequency detector. Applicant also refers to calibration in claim 1 but the examiner does not see this term used in claim 1.

Claim 4, 6, 7, 10-12 are allowable over the prior art of record.

Claims 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing

date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 and after July 15, 2005 the fax number will be 571-273-8300. Note that old fax number (703-872-9306) will be service until September 15, 2005.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS
December 09, 2005

Michael B Shingleton
Primary Examiner
Group Art Unit 2817